<u>WHAT IS CLAIMED IS</u>:

1. Data storage format for storing topography data associated with an object comprising:

a first section for storing topography data in relation to a reference entity with respect to which the topography data is determined;

a second section for storing information concerning the reference entity;

a third section for storing information concerning the topography direction along which the topography data is measured or calculated.

2. The data storage format described in claim 1, wherein the topography data is defined in N-dimensional space.

3. The data storage format described in claim 1, wherein the information concerning the reference entity is defined in N-dimensional space.

4. The data storage format described in claim 1, wherein the reference entity is another topography surface.

5. The data storage format described in claim 1, wherein the reference entity is described as a function in N-dimensional space.

6. The data storage format described in claim 1, wherein the reference entity is a point in space.

7. The data storage format described in claim 1, wherein the reference entity is a line.

5

8. The data storage format described in claim 1, wherein the topography data, the reference entity, and the topography direction are described in a Cartesian coordinate system.

10

9. The data storage format described in claim 1, wherein the topography data, the reference entity, and the topography direction are described in a non-Cartesian coordinate system.

10. The data storage format described in claim 1, wherein position of the reference entity and the topography direction with respect to a

15

global coordinate system are known.

11. The data storage format described in claim 10, wherein the global coordinate system is one that has its origin in a patient's body.

20

12. The data storage format described in claim 10, wherein the reference entity and the topography direction are registered with respect to a

first coordinate system, the first coordinate system being registered to the

global coordinated system.

13. The data storage format described in claim 12, wherein a

transformation is performed between the first coordinate system and a second

5   coordinate system to which a three dimensional image is registered, the second

coordinate system being independent from the first coordinate system and

being registered to the global coordinate system.

14. The data storage format described in claim 13, wherein the

10   three dimensional image is fused to the topography data.

15. Method for storing topography data in data storage format

comprising;

storing topography data in a first section of the data storage

15   format,

determining reference entity with respect to which the

topography data is measured or calculated and storing the information in a

second section of the data storage format;

obtaining information regarding the topography direction along

20   which the topography data is measured or calculated and storing the

information in a third section of the data storage format.

16. Method for using data stored in data storage format including a first section for storing topography data, a second section for storing information concerning reference entity with respect to which the topography data is determined, and a third section for storing information concerning topography direction along which the topography data is measured or calculated, comprising:

utilizing the topography data stored in a first section of the data storage format for applications that do not involve fusion of the topography data to other image data;

utilizing information stored in all three sections of the data storage format in connection with applications that involve fusion of the topography data to other image data.

17. The method described in claim 16, wherein data stored in a first section of the data storage format is used to register and fuse the topography data to a three-dimensional image.